IN THE CLAIMS:

Claim 1 (currently amended) A method for preferential disruption of ~~treating~~ malfunctioning cells in a living mammal, which comprises:

(a) administering a compound which associates with DNA in cells of said mammal, said compound comprising a pre-selected element; and then

(b) irradiating a selected region, in which malfunctioning cells having said compound associated with DNA are located, with line emission x-rays of an energy selected to cause emission of Auger electrons from said pre-selected element of said compound in a dose effective to disrupt DNA proximate to the irradiated pre-selected element, said selected region being a localized region which predominantly contains the malfunctioning cells so as to localize the effects of disrupting DNA to the malfunctioning cells and to minimize the effect on normal cells.

Claim 2 (original) A method according to claim 1, wherein the compound intercalates into the DNA helix.

Claim 3 (original) A method according to claim 1, wherein the compound binds to the DNA.

Claim 4 (original) A method according to claim 1, wherein the compound is substantially non-toxic.

Claim 5 (original) A method according to claim 1, wherein the compound has an affinity for both normal and malfunctioning cells.

Claim 6 (original) A method according to claim 5, wherein the compound is substantially non-toxic.

Claim 7 (original) A method according to claim 1, wherein the compound has a selective affinity for malfunctioning cells.

Claim 8 (original) A method according to claim 1, wherein the compound is selected from the group consisting of annamycin, bromodeoxyuridine, bromodeoxycytosine and iododeoxyuridine

Claim 9 (original) A method according to claim 1, wherein the compound is iododeoxyuridine.

Claim 10 (original) A method according to claim 9, wherein the compound is bromodeoxyuridine.

Claim 11 (original) A method according to claim 1, wherein the compound is a ruthenium compound which binds to or intercalates into DNA.

Claim 12 (original) A method according to claim 1, wherein the compound is cisplatin.

Claim 13 (original) A method according to claim 1, wherein the pre-selected element of

the compound has an atomic number in the range of from 35 to 79.

Claim 14 (original) A method according to claim 13, wherein the pre-selected element of the compound is selected from the group consisting of Ru, I and Gd.

Claim 15 (original) A method according to claim 13, wherein the malfunctioning cells of the mammal's body are superficial and the pre-selected element of the compound is Br.

Claim 16 (original) A method according to claim 1, wherein the compound is selected to have a high rate of excretion by normal physiological processes.

Claim 17 (currently amended) A method according to claim 1, wherein the compound is selected for stability against dissociation of the pre-selected element during the time prior to ~~substantially complete~~ excretion or metabolism of the compound.

Claim 18 (original) A method according to claim 1, wherein an end window transmission x-ray tube producing bright line emission x-rays is used for irradiating.

Claim 19 (currently amended) A method according to claim 18, wherein an e-beam generated in the x-ray tube is focused on a thin target having a thickness selected to provide the line emission x-rays, said thickness not exceeding ~~of up to~~ about 40 μm, said target being inside the tube and functions as part of the end window.

Claim 20 (currently amended) A method according to claim 19, wherein the target and the e-beam energy are selected to provide ~~substantially~~ monochromatic line emission x-

rays having an energy above and sufficiently near the K-absorption edge of the pre-selected element of the compound to cause said emission of Auger electrons.

Claim 21 (original) A method according to claim 20, wherein the thin target is selected from the group consisting of Mo, Ag, La, Sr and Tm.

Claim 22 (currently amended) A method according to claim 19, wherein the target and the e-beam energy are selected to provide ~~substantially~~ monochromatic line emission x-rays having an energy above and sufficiently near the L-absorption edge of the pre-selected element of the compound to cause said emission of Auger electrons.

Claim 23 (original) A method according to claim 22, wherein the thin target is Rb.

Claim 24 (original) A method according to claim 23, wherein the pre-selected element of the compound is Pt.

Claim 25 (original) A method according to claim 1, wherein Auger electrons are released with a dose of at least about 10^6 Gy.

Claim 26 (original) A method according to claim 25, wherein the dose of at least about 10^6 Gy is released within a distance from the element of the compound of up to about 10 angstroms.

Claim 27 (original) A method according to claim 1, wherein step (b) is repeated at least

once.

Claim 28 (original) A method according to claim 27, wherein Auger electrons are released during each repetition of step(b) with a dose of at least about 10^6Gy.

Claim 29 (original) A method according to claim 28, wherein the dose of at least about 10^6 Gy is released within a distance from the element of the compound of up to about 10 angstroms.

Claim 30 (original) A method according to claim 1, wherein step (b) is performed on cells removed from the mammal.

Claim 31 (original) A method according to claim 30, wherein after step (b) is performed, the removed cells are returned to the mammal.

Claim 32 (original) A method according to claim 30, wherein after step (b) is performed, the removed cells are transplanted.

Claim 33 (original) A method according to claim 1, wherein step (a) and step (b) are performed on cells removed from the mammal.

Claim 34 (original) A method according to claim 33, wherein after step (b) is performed, the removed cells are returned to the mammal.

Claim 35 (original) A method according to claim 33, wherein after step (b) is

performed, the removed cells are transplanted.

Claim 36 (previously presented) A method according to claim 1, wherein the malfunctioning cells are tumor or cancer cells and the mammal is a human.

Claim 37 (original) A method according to claim 36, wherein the compound intercalates into the DNA helix.

Claim 38 (original) A method according to claim 36, wherein the compound binds to the DNA.

Claim 39 (original) A method according to claim 36, wherein the compound is substantially non-toxic.

Claim 40 (original) A method according to claim 36, wherein the compound has an affinity for both normal and cancerous cells.

Claim 41 (original) A method according to claim 40, wherein the compound is substantially non-toxic.

Claim 42 (original) A method according to claim 36, wherein the compound has a selective affinity for cancerous cells.

Claim 43 (original) A method according to claim 36, wherein the compound is selected

from the group consisting of annamycin, bromodeoxyuridine, bromodeoxycytosine and iododeoxyuridine.

Claim 44 (original) A method according to claim 36, wherein the compound is iododeoxyuridine.

Claim 45 (original) A method according to claim 36, wherein the compound bromodeoxyuridine.

Claim 46 (original) A method according to claim 36, wherein the compound is a ruthenium compound which binds to or intercalates into DNA.

Claim 47 (original) A method according to claim 36, wherein the compound is Cisplatin.

Claim 48 (original) A method according to claim 36, wherein the pre-selected element of the compound has an atomic number in the range of from 35 to 79.

Claim 49 (original) A method according to claim 48, wherein the pre-selected element of the compound is selected from the group consisting of Ru, I and Gd.

Claim 50 (original) A method according to claim 48, wherein the cancerous cells of the human's body are superficial and the pre-selected element of the compound is Br.

Claim 51 (original) A method according to claim 36, wherein the compound is selected to have a high rate of excretion by normal physiological processes.

Claim 52 (currently amended) A method according to claim 36, wherein the compound is selected for stability against dissociation of the pre-selected element during the time prior to ~~substantially complete~~ excretion or metabolism of the compound.

Claim 53 (original) A method according to claim 36, wherein an end window transmission x-ray tube producing bright line emission x-rays is used for irradiating.

Claim 54 (currently amended) A method according to claim 53, wherein an e-beam generated in the x-ray tube is focused on a thin target having a thickness selected to provide the line emission x-rays, said thickness not exceeding ~~of up to~~ about 40 μm, said target being inside the tube and functions as part of the end window.

Claim 55 (currently amended) A method according to claim 54, wherein the target and the e-beam energy are selected to provide ~~substantially~~ monochromatic line emission x-rays having an energy above and sufficiently near the K-absorption edge of the element of the compound to cause said emission of Auger electrons.

Claim 56 (original) A method according to claim 55, wherein the thin target is selected from the group consisting of Mo, Ag, La, Sr and Tm.

Claim 57 (currently amended) A method according to claim 54, wherein the target and

the e-beam energy are selected to provide ~~substantially~~ monochromatic line emission x-rays having an energy above and sufficiently near the L-absorption edge of the pre-selected element of the compound to cause said emission of super electrons.

Claim 58 (original) A method according to claim 57, wherein the thin target is Rb.

Claim 59 (original) A method according to claim 58, wherein the pre-selected element of the compound is Pt.

Claim 60 (original) A method according to claim 36, wherein Auger electrons are released with a dose of at least about 10^6 Gy.

Claim 61 (original) A method according to claim 60, wherein the dose of at least about 10^6 Gy is released within a distance from the element of the compound of up to about 10 angstroms.

Claim 62 (original) A method according to claim 36, wherein step (b) is repeated at least once.

Claim 63 (original) A method according to claim 62, wherein Auger electrons are released during each repetition of step (b) with a dose of at least about 10^6 Gy.

Claim 64 (original) A method according to claim 63, wherein the dose of at least about 10^6 Gy is released within a distance from the element of the compound of up to about 10

angstroms.

Claim 65 (previously presented) A method according to claim 1, wherein the malfunctioning cells are cancerous cells and the mammal is a human, wherein the method comprises:

(a) administering to the human the compound which associates with DNA, in cells of said human, said compound comprising a pre-selected element selected from the group consisting of Br, Ru, I, Gd and Pt; and then

(b) irradiating at least once, by means of an end window transmission x-ray tube, the selected region, in which the cancerous cells having said compound associated with DNA are located, with line emission x-rays of an energy selected to cause emission of Auger electrons from said pre-selected element of said compound in a dose effective to disrupt DNA proximate to the irradiated pre-selected element, said dose for each activation of said x-ray tube being at least about 10^6 Gy within a distance from the pre-selected element of the compound of up to about 10 angstroms.

Claim 66 (original) A method according to claim 65, wherein the compound intercalates into the DNA helix.

Claim 67 (original) A method according to claim 65, wherein the compound binds to the DNA.

Claim 68 (original) A method according to claim 65, wherein the compound is substantially non-toxic.

Claim 69 (original) A method according to claim 65, wherein the compound has an affinity for both normal and tumorous cells.

Claim 70 (original) A method according to claim 69, wherein the compound is substantially non-toxic.

Claim 71 (original) A method according to claim 65, wherein the compound has a selective affinity for tumorous cells.

Claim 72 (original) A method according to claim 65, wherein the compound is selected from the group consisting of annamycin, bromodeoxyuridine, bromodeoxycytosine and iododeoxyuridine.

Claim 73 (original) A method according to claim 65, wherein the compound is iododeoxyuridine.

Claim 74 (original) A method according to claim 65, wherein the compound is bromodeoxyuridine.

Claim 75 (original) A method according to claim 65, wherein the compound is a

ruthenium compound which binds to or intercalates into DNA.

Claim 76 (original) A method according to claim 65, wherein the compound is cisplatin.

Claim 77 (original) A method according to claim 65, wherein the compound is selected to have a high rate of excretion by normal physiological processes.

Claim 78 (currently amended) A method according to claim 65, wherein the compound is selected from stability against dissociation of the pre-selected element time prior to ~~substantially complete~~ excretion or metabolism of the compound.

Claim 79 (currently amended) A method according to claim 65, wherein an e-beam generated in the x-ray tube is focused on a thin target having a thickness selected to provide the line emission x-rays, said thickness not exceeding ~~of up to~~ about 40 μm, said target being inside the tube and functions as part of the end window.

Claim 80 (currently amended) A method according to claim 79, wherein the target and the e-beam energy are selected to provide ~~substantially~~ monochromatic line emission x-rays having an energy above and sufficiently near the K-absorption edge of the pre-selected element of the compound to cause said emission of Auger electrons.

Claim 81 (original) A method according to claim 80, wherein the thin target is selected from the group consisting of Sr, Ag, La, and Tm.

Claim 82 (currently amended) A method according to claim 79, wherein the target and the e-beam energy are selected to provide ~~substantially~~ monochromatic line emission x-rays having an energy above and sufficiently near the L-absorption edge of the pre-selected element of the compound to cause said emission of Auger electrons.

Claim 83 (original) A method according to claim 82, wherein the thin target is Rb.

Claim 84 (original) A method according to claim 83, wherein the pre-selected element of the compound is Pt.

Claim 85 (previously presented) A method for treating malfunctioning cells in a living mammal, which comprises:

(a) providing a kit comprising

(1) an x-ray tube having a target comprising a selected metal, said tube being capable of emitting monochromatic line emission x-rays; and (2) a compound comprising a selected element, said compound being capable, upon administration to said mammal, of associating with DNA in cells of said mammal; the selected metal of said target and the selected element of said compound being selected together:

(i) for said metal of said target to emit line emission x-rays having an energy above and near the K-absorption edge or the L-absorption edge of the selected element of said compound, and

(ii) for said element of said compound to release a dose of

Auger electrons upon irradiation by said line emission x-rays;

(b) administering the compound to the mammal and

(c) irradiating a selected region, in which malfunctioning cells having said compound associated with DNA are located, with the monochromatic line emission x-rays form the x-ray tube to cause emission of Anger electrons from said pre-selected element of said compound in a dose effective to disrupt DNA proximate to the irradiated pre-selected element.

Claim 86 (previously presented) A method according to claim 85, wherein said x-ray tube is an end window transmission x-ray tube capable of emitting bright, line emission x-rays, said x-ray tube comprising an evacuated, elongated chamber having first and second ends, the first end being connected to a power supply, and within said chamber: electron emitter means near the first end for generating a beam of electrons; an end window transparent to x-rays at the second end, an inner portion of said end window comprising said target; and means for focusing said electron beam on said target.

Claim 87 (currently amended) A method according to claim 86, wherein the target has a thickness selected to provide the line emission x-rays, said thickness not exceeding ~~of up to~~ about 40 μm.

Claim 88 (previously presented) A method according to claim 85, wherein the target is selected from the group consisting of Rb, Mo, Ag, La, Sr and Tm.

Claim 89 (previously presented) A method according to claim 85, wherein the compound is substantially non-toxic.

Claim 90 (previously presented) A method according to claim 85, wherein the compound has an affinity for both normal and malfunctioning cells.

Claim 91 (previously presented) A method according to claim 90, wherein the compound is substantially non-toxic.

Claim 92 (previously presented) A method according to claim 85, wherein the compound has a selective affinity for malfunctioning cells.

Claim 93 (previously presented) A method according to claim 85, wherein the compound is selected from the group consisting of annamycin, bromodeoxyuridine, bromodeoxycytosine and iododeoxyuridine.

Claim 94 (previously presented) A method according to claim 85, wherein the compound is iododeoxyuridine.

Claim 95 (previously presented) A method according to claim 85, wherein the compound is bromodeoxyuridine.

Claim 96 (previously presented) A method according to claim 85, wherein the compound is a ruthenium compound which binds to or intercalates into DNA.

Claim 97 (previously presented) A method according to claim 85, wherein the compound is cisplatin.

Claim 98 (previously presented) A method according to claim 85, wherein the pre-selected element of the compound has an atomic number in the range of from 35 to 83.

Claim 99 (previously presented) A method according to claim 98, wherein the pre-selected element of the compound is selected from the group consisting of Br, Ru, I, Gd and Pt.